

VISUALIZED PROGRAM FOR COMPLETION OF PROJECT 9043

STATOTHR

22 October 1963

The following is a general outline of the proposed work to be done in the image enhancement program, upon completion of the bench assembly and alignment:

1. An evaluation and analysis of the occluding filters in the modified bench is necessary. At the same time, the system will be put into working order.
2. A re-formulation of the mathematical description of a non-sharp pulse of Gaussian form which has been passed through a sharp cutoff occluding filters.

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3. Data produced by [REDACTED] on the unmodified bench will be analyzed on a microdensitometer and plotted in order to experimentally verify the theoretical analysis.

4. The use of transmission in edge enhancement will be studied. Experimental work will be done first, since the analytical part is quite difficult and need not be attempted until it is shown that there is merit in the process. Both Gaussian distributions and aerial scenes will be used (the latter in conjunction with [REDACTED] image evaluation program). It is believed that the problem of registration of negatives may be solved by using an integrating (3 negative) enlarger.

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5. Edge enhancement by exposure addition will also be investigated experimentally before analytic work is attempted for the same reason as in (4). A comparison of the two techniques (4 & 5) will be made for both the Gaussian and the aerial scene. [REDACTED] has done a good deal of work in this area and it might be possible to limit the work here to a further analysis of his results.

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6. A final area is an assessment of the value of these techniques when used for mensuration. This is not, actually, a separate experimental study, but rather an application of the earlier work. It is quite possible that the data collected in 3, 4, and 5, might be sufficient. It will be left until a later time to decide whether additional experimentation is required.

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24 October 1963

Dear Dick:

I've been meaning to write to you to thank you for sending that analysis for the third pair of objectives. We managed to scrape up a little money, just enough to buy another lens and have it mounted. This setup is perfect for any further research requiring an aerial image scan of higher frequencies, in addition to easing calibration in the present work.

I did a fairly extensive analysis of the use of both side orders plus a small central order, coming out with pretty much the same results as you did in your earlier analysis; that is, a double frequency, but lacking a modulation term. Yet, in the small amount of experimental work I've done in the area, I've found that you can get a sinusoidal distribution with a small variable modulation. With this new setup, I'll be able to go through many different combinations with varying attenuation of the intensities quite easily since I won't have to go through the touchy business of tracing the aerial image each time as I've been doing up until now.

The reason that I haven't written until now was that I'd been planning on including in it a sort of informal decision by us as to what we hoped to do on the Image Enhancement work and I guess we hadn't officially made that decision until this week. I'm including with this letter an unofficial summary of what we expect to accomplish. Geoff talked with the contract monitor today, who said that he, and possibly yourself, would be coming up in November at which time I guess we'll formally present our work program. I hope to see you then.

Sincerely

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PN:mjc